

Hornsea Project Three  
Offshore Wind Farm



## Hornsea Project Three Offshore Wind Farm

Response to the Secretary of State's Consultation  
Appendix 7: In-Principle Southern North Sea SAC Site Integrity Plan  
(Updated February 2020)

Date: February 2020

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Document Control			
<b>Document Properties</b>			
Organisation	Ørsted Hornsea Project Three		
Author	GoBe Consultants Ltd.		
Checked by	Karma Leyland		
Approved by	Andrew Guyton		
Title	Appendix 7: In-Principle Southern North Sea SAC Site Integrity Plan		
<b>Version History</b>			
Date	Version	Status	Description / Changes
07/11/2018	A	Final	Submission at Deadline 1 (7 <sup>th</sup> Nov 2018)
15/01/2018	2.0		Submission at Deadline 4 (15 <sup>th</sup> Jan 2019)
31/12/2019	3.0		Submission to BEIS on February 2020

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## Table of Contents

1.	Introduction	4
1.1	Purpose of the SIP .....	4
1.2	Requirement for the SIP .....	5
2.	Consultation	6
2.1	Engagement overview .....	6
2.2	Schedule for agreement of the SIP .....	6
3.	Description of Project	8
4.	Southern North Sea SAC for Harbour Porpoise	9
4.1	SAC Overview .....	9
4.2	Conservation Objectives .....	9
4.3	Advice on Management Measures .....	10
5.	Potential Effects	11
5.1	Introduction .....	11
5.2	Effects from the Project alone .....	11
5.3	In-combination Effects .....	15
6.	Project Mitigation and Management Measures	16
6.1	Embedded mitigation and the MMMP .....	16
6.2	Licensing .....	17
6.3	Project Southern North Sea SAC site integrity measures .....	17
7.	Conclusions	21
8.	References	22

## 1. Introduction

### 1.1 Purpose of the SIP

- 1.1.1 The purpose of the Hornsea Project Three offshore wind farm (hereafter referred to as Hornsea Three) In Principle Southern North Sea SAC Site Integrity Plan (the SIP) is to set out the approach for Hornsea Three to deliver any project mitigation or management measures in relation to the Southern North Sea Special Area of Conservation (SAC).
- 1.1.2 Management measures outlined in the SIP in relation to Hornsea Three, will be implemented (if required) to ensure the avoidance of significant disturbance of harbour porpoise *Phocoena phocoena* in relation to the SAC's Conservation Objectives (COs), and therefore allow the conclusion of 'no adverse effect beyond reasonable scientific doubt' on the SAC.
- 1.1.3 The approach and measures listed in the SIP respond to the conclusions of the Habitats Regulations Assessment (HRA) detailed in the Report to Inform an Appropriate Assessment (RIAA) (APP-052). Based on the information presented in the RIAA, it was concluded that there would be no adverse effect on the population or distribution of the qualifying feature of the SAC (then referred to as the candidate SAC (cSAC)) either alone or in-combination with other plans and projects. Nonetheless, as a precautionary measure this SIP outlines an in-principle management plan to mitigate any risk to harbour porpoise from the development of Hornsea Three.
- 1.1.4 The mitigation and management measures in the SIP will be reviewed and updated post consent in line with the approach set out in the SIP.
- 1.1.5 The SIP provides a framework for further consultation and discussion by Hornsea Project Three with the Marine Management Organisation (MMO), Statutory Nature Conservation Bodies (SNCBs) and other relevant stakeholders following consent, to reach agreement on the exact details of any required project-related management measures.
- 1.1.6 Offshore wind farms typically have a long lead-in time for development. Due to this, it is not practical to provide final detailed method statements before consent is granted. However, agreeing guiding principles will allow refinements to be made based on the best available knowledge and technology. A final detailed SIP will be produced closer to the time of construction, following revision and consultation as per the outline schedule in Section 2.

## 1.2 Requirement for the SIP

- 1.2.1 The Applicant has (following consultation with Natural England and the MMO in response to their Relevant Representations) updated the draft DCO to include a Condition 13(5) within the generation assets dML and 14(5) within the transmission assets dML to commit the undertaker to developing and securing approval of a SIP prior to the commencement of works. The Condition is worded as follows:)

*(5) In the event that driven or part-driven pile foundations are proposed to be used, the licenced activities, or any phase of those activities must not commence until a site integrity plan which accords with the principles set out in the in principle Hornsea Three Southern North Sea Site of Community Importance Site Integrity Plan has been submitted to the MMO and the MMO is satisfied that the plan provides such mitigation as is necessary to avoid adversely affecting the integrity (within the meaning of the 2017 Regulations) of a relevant site, to the extent that harbour porpoise are a protected feature of that site.*

## 2. Consultation

### 2.1 Engagement overview

- 2.1.1 Refinement of this in-principle SIP will follow an iterative process as the Hornsea Three project design is optimised post consent. Hornsea Project Three will continue to engage with the MMO and their advisors throughout this process and will seek to address any issues raised during consultation.
- 2.1.2 Non-statutory stakeholders such as The Wildlife Trusts and Whale and Dolphin Conservation will also be provided with a draft of the in-principle SIP and any future iterations for comment.

### 2.2 Schedule for agreement of the SIP

- 2.2.1 The exact dates for agreement and refinement of the SIP cannot be determined at this stage. However, key milestones have been outlined in Table 2.1 to signpost the likely development of the SIP between consent and construction.

Table 2.1: Indicative schedule for developing and finalising the SIP			
Indicative Stage	When	Hornsea Three Actions	Relevant Authority/ Statutory Advisor
Consent granted and Appropriate Assessment (AA)	Spring 2020?	Review in principle SIP and identify areas for revisions/updates.	Internal only
Design optimisation	Pre-construction	Review the SIP and mitigation and management options taking into account any refinements of project parameters that may affect the conclusions of the AA	Internal only
1 <sup>st</sup> draft of the SIP	Immediately following CfD award	Design optimisation work will inform the CfD bid for the Project. Following CfD award the construction timescale for the Project will be defined and level of other activity that will overlap more certain.  Based on the design optimisation and CfD bid outcomes, Hornsea Project Three will review the conclusions of the AA and if necessary undertake an assessment to determine the potential effects resulting from the final piling parameters (for the Project alone and in-combination). This process may be further informed by contemporary noise modelling if deemed necessary. The review will consider the need for any likely mitigation or management measures and provide detail on	Consultation with MMO, Natural England, TWT and WDC.

**Table 2.1: Indicative schedule for developing and finalising the SIP**

<b>Table 2.1: Indicative schedule for developing and finalising the SIP</b>			
		their efficacy in context of the effects predicted and revise the SIP as appropriate.	
Review of the SIP	Approximately 9-6 months prior to construction	Following further detailed project planning and design optimisation Hornsea Project Three will make any refinements to assessments presented within the SIP.  If mitigation remains a requirement then proposals will be finalised within the SIP and sufficient detail presented to demonstrate how they will be deployed to reduce the effect to appropriate levels.	Consultation with MMO and Natural England, TWT and WDC.
Finalisation and sign off of the SIP	At least 4 months prior to construction	Update mitigation and management measures taking account of consultee comments.	MMO to approve

### 3. Description of Project

- 3.1.1 We have not included a full description of the project in the SIP as this is available in the primary application documentation (see Chapter 3 Project Description, (APP-058) and Chapter 4 Marine Mammals (APP-064). However, as the project description is refined post consent this section of the SIP will be updated to reflect any relevant changes.
- 3.1.2 It is relevant to note that additional refinements to the project envelope have been committed to by the Applicant, which are detailed in Appendix 4 to Applicant's Response to the Secretary of State's Consultation and, secured within the updated dDCO as submitted at Appendix 9 to the Applicant's response. Those refinements that have relevance to marine mammals are as follows:
- Reduction in maximum number of foundations from 300 to 231.
- 3.1.3 In terms of the need and content of this document the refinements have no material bearing. However, it is relevant to note that a reduction in the number of foundations will naturally lead to a reduction in the duration over which percussive piling (and therefore disturbance effects) may occur.

## 4. Southern North Sea SAC for Harbour Porpoise

### 4.1 SAC Overview

- 4.1.1 The Southern North Sea SAC was formally designated in February 2019 for the conservation of harbour porpoise. The Southern North Sea SAC boundary is based on a modelling prediction of harbour porpoise habitat (Heinänen and Skov 2015), and harbour porpoise densities are linked to this modelled suitable habitat. JNCC (2015) have also defined seasonal (summer and winter) areas of the SAC reflecting how the importance of the site to harbour porpoise varies.

### 4.2 Conservation Objectives<sup>1</sup>

- 4.2.1 The Conservation Objectives (COs) for the Southern North Sea SAC are designed to ensure that the obligations of the Habitats Directive can be met. The specific COs<sup>2</sup> for this site are summarised as follows:

*To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:*

- 1. Harbour porpoise is a viable component of the site;*
- 2. There is no significant disturbance to the species; and*
- 3. The condition of supporting habitats and processes, and the availability of prey is maintained.*

- 4.2.2 The COs are focused on addressing pressures that may affect the designated site's integrity. The critical point about the site integrity is whether the extent or degree of impact resulting from a pressure, has the potential to affect (alone or in-combination) the ability of the site to meet the COs and maintain existing Favourable Conservation Status (FCS) of the species. Further detail on the COs and Advice on Operations can be found at JNCC 2019<sub>b</sub><sup>3</sup>.

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<sup>2</sup> JNCC 2019<sub>a</sub>: Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: Southern North Sea Conservation Objectives and Advice on Operations March 2019

<sup>3</sup> JNCC 2019<sub>b</sub>: Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: Southern North Sea Conservation Objectives and Advice on Operations March 2019

## 4.3 Advice on Management Measures

4.3.1 Specific management measures are currently being developed for the SAC, however JNCC and Natural England (2016) advise that *'the site should be managed in a way that ensures that its contribution to the maintenance of the harbour porpoise population at FCS is optimised, and that this may require management of human activities occurring in or around the site if they are likely to have an adverse impact on the site's Conservation Objectives either directly or indirectly identified through the assessment process'*.

4.3.2 Further to this, the COs and Advice on Operations (JNCC, 2019b) identifies the following management considerations for percussive piling:

*A European Protected Species (EPS) licence is required for any construction activity which could affect cetaceans and carries the risk of resulting in a disturbance or injury offence. Developers are required to follow the 'Statutory Nature Conservation Agency protocol for minimising the risk of injury to marine mammals from piling noise'<sup>18</sup>. An HRA will be considered for all new (or review of consent) developments (coastal and marine) using pile driving within the site or within 26km of site boundaries. If additional mitigation (to that required under EPS licence) is required, planning and management of pile driving activities may be needed. There is potential for a reduction or limitation of the disturbance / displacement effects by varying the schedule of piling, particularly if several developments are constructing at the same time and pile driving footprints do not overlap (which would maximise area from which porpoise are excluded). Limited spatio-temporal restrictions may be needed. Other examples of mitigation that might be required include the use of sound dampers, i.e. methods that create a barrier to sound transfer (e.g. bubble curtains) and the use of alternative foundation types (e.g. gravity foundations, suction cups, floating turbines, drilling).*

4.3.3 In the absence of finalised management measures for the SAC, Hornsea Three are confident that the existing RIAA (APP-052) and their commitment to develop a Marine Mammal Mitigation Protocol (MMMP), Southern North Sea SAC SIP and EPS licencing in consultation with the relevant authorities will ensure that project management and mitigation measures, if deemed necessary, are secured and will ensure the COs of the site are not compromised.

## 5. Potential Effects

### 5.1 Introduction

5.1.1 Section 6.5 of the RIAA Report (APP-052) identified the following potential effects on the harbour porpoise qualifying feature, which required further assessment:

- Underwater noise from foundation installation and UXO clearance (pre-construction/construction);
- Increased vessel traffic and collision risk (Construction/Decommissioning/Operation);
- Accidental pollution events (Construction/Decommissioning/ Operation); and
- Changes in the fish and shellfish community resulting from construction impacts may lead to a loss in prey resources (Construction/ Decommissioning).

5.1.2 The RIAA carried out an assessment of each of these effects which is summarised below.

### 5.2 Effects from the Project alone

5.2.1 Table 2 presents a summary of potential effects of Hornsea Project Three alone.

Table 2: Potential Effects of Hornsea Project Three Alone

Potential Effect	Assessment in relation to the SAC summer and winter areas	Adverse effect on site integrity
Construction		
Underwater noise from foundation piling and other construction activities (e.g. drilling of piles) within the Hornsea Three array area has the potential to cause injury or disturbance to marine mammals	<p>The MMMP for piling (in accordance with the draft MMMP (document 8.13) will reduce the risk of permanent auditory injury to harbour porpoise as a result of underwater noise during piling at Hornsea Project Three.</p> <p>Temporary displacement of harbour porpoise would be less than 20% of the seasonal component of the SAC area at any one time or on average not exceed 10% of the seasonal component of the SAC area over the duration of that season.</p>	<b>No</b>

Potential Effect	Assessment in relation to the SAC summer and winter areas	Adverse effect on site integrity
Underwater noise from UXO clearance within the Hornsea Three Array area has the potential to cause injury or disturbance to marine mammals	<p>The effective implementation of a UXO MMMP would reduce the risk of permanent auditory injury (PTS) to harbour porpoise during any underwater detonations at Hornsea Three.</p> <p>Temporary displacement of harbour porpoise would be less than 20% of the seasonal component of the SAC area at any one time or on average not exceed 10% of the seasonal component of the SAC area over the duration of that season.</p>	<b>No</b>
Increased vessel traffic during construction may result in an increase in disturbance to or collision risk with marine mammals	No indication that effects would lead to a reduction in the viability of the harbour porpoise feature or adversely impact the supporting habitats and processes relevant to this species. Furthermore, due to the temporary nature of the activity there is no indication that effects would result in a permanent shift in the distribution of the feature within this SAC in the long term and subsequently no adverse effect on the population or distribution of this qualifying feature is anticipated.	<b>No</b>
Accidental pollution released during construction (including construction activities, vessels, machinery and offshore fuel storage tanks) may lead to release of contaminants into the marine environment and subsequently result in potential effects on marine mammals	No indication that effects associated with accidental pollution events would lead to a reduction in the viability of the harbour porpoise feature or adversely impact the supporting habitats and processes relevant to this species. Nor is there any indication that this impact would adversely affect any other factors which are required to ensure that the site is maintained in favourable condition.	<b>No</b>

Potential Effect	Assessment in relation to the SAC summer and winter areas	Adverse effect on site integrity
Operation and Maintenance		
Increased vessel traffic during operation and maintenance may result in an increase in disturbance to marine mammals	No indication that effects would lead to a reduction in the viability of the harbour porpoise feature or adversely impact the supporting habitats and processes relevant to this species. Furthermore, due to the temporary nature of the activity there is no indication that effects would result in a permanent shift in the distribution of the feature within this SAC in the long term and subsequently no adverse effect on the population or distribution of this qualifying feature is anticipated.	<b>No</b>
Accidental pollution released during operation and maintenance (including maintenance activities, vessels, machinery and offshore fuel storage tanks) may lead to release of contaminants into the marine environment and subsequently result in potential effects on marine mammals.	No indication that effects associated with accidental pollution events would lead to a reduction in the viability of the harbour porpoise feature or adversely impact the supporting habitats and processes relevant to this species. Nor is there any indication that this impact would adversely affect any other factors which are required to ensure that the site is maintained in favourable condition.	<b>No</b>

5.2.2 Table 3 summarises the potential effects of Hornsea Project alone in relation to the COs of the SNS SAC for harbour porpoise. Section 6.5 of the RIAA Report (APP-052) indicates that the development of Hornsea Three would allow the draft COs to be maintained. There would be no potential for an adverse effect on the integrity of the SNS SAC in relation to the COs for harbour porpoise from Hornsea Three alone (Table 3).

**Table 3: Summary of the assessment of the potential effects of Hornsea Three (alone) on the Southern North Sea SAC in relation to the draft Conservation Objectives for harbour porpoise**

Conservation Objectives	Injury or disturbance from underwater noise from foundation piling	Injury or disturbance from underwater noise from UXO clearance	Increased vessel traffic may result in an increase in collision risk or disturbance	Accidental pollution
The species is a viable component of the site	x	x	x	x
There is no significant disturbance of the species	x	x	x	x
The condition of supporting habitats and processes, and the availability of prey is maintained	x	x	x	x

x = no potential for any adverse effect on the integrity of the site in relation to the conservation objectives

## 5.3 In-combination Effects

- 5.3.1 The RIAA considered the potential impacts of Hornsea Three project during construction, operation and maintenance and decommissioning, alone and in-combination with other relevant plans and projects with respect to the site's COs. The in-combination scenario in the RIAA presents a conservative assessment scenario with regard to project piling schedules. It assumes, where specific piling schedules for other projects are unavailable, that piling will occur throughout the full construction window. It is important to note that it is not realistic to assume that all projects will progress to construction at the same time or to their consented maximum design scenarios based on experience from similar projects within the UK.
- 5.3.2 With respect to the viability and habitats and prey COs, the RIAA concluded there is no indication, at this stage, that Hornsea Three, alone or in-combination with other plans and projects would prevent the maintenance or restoration of Annex II marine mammal features, habitats or supporting habitats, for which the site is designated.
- 5.3.3 For the significant disturbance CO, the Tier 1 assessments for both the summer and winter components of the SNS SAC, identified that Hornsea Three, alone or in-combination with other plans and projects would not prevent the maintenance or restoration of Annex II marine mammal features, habitats or supporting habitats, for which the site is designated. The assessment recognised that for subsequent Tiers (2 and 3) there are a number of additional projects that have the theoretical potential to gain consent and overlap with construction of Hornsea Three but given the uncertainty surrounding the timing and nature of which these projects may come forward insufficient confidence can be held to draw a firm conclusion. To reflect this uncertainty, the Applicant sought to include a condition (as detailed in Section 1.2 of this in-principle SIP) within the draft DCO (as submitted at the point of application) that was broadly aligned with those of previous consented projects where this uncertainty existed (i.e., Hornsea Two and Dogger Bank projects). The intention was to require the undertaker to demonstrate the actual risk to the SAC prior to construction, once it was clear what the nature of the final scheme design was and exactly what other activities will be overlapping with its construction. Furthermore, if this process revealed risk of an adverse effect on integrity then measures (examples of which were cited in the draft DCO (Condition 13(5) of the Generation Assets deemed Marine Licence)) were to be considered and applied where necessary to demonstrate how the risk of adverse effect had been appropriately mitigated, with these measures requiring approval prior to commencement of construction. The projects' commitment to the SIP will essentially replace this existing draft Condition and afford the same protection to site integrity.

## 6. Project Mitigation and Management Measures

### 6.1 Embedded mitigation and the MMMP

6.1.1 The establishment of exclusion zones and soft-start procedures, through the MMMP, will reduce the risk of injury to any marine mammals located within a few metres of the pile during installation to negligible levels. Table 5.1 sets out the designed in mitigation measures that will be implemented during the construction, operation and decommissioning of Hornsea Three.

<b>Measures adopted as part of Hornsea Three</b>	<b>Justification</b>
A Project Environmental Management and Monitoring Plan (PEMMP) (construction and operation phases) and Decommissioning Plan (decommissioning phase) will be implemented covering the construction, operation and maintenance, and decommissioning phases of Hornsea Three respectively and will include a Marine Pollution Contingency Plan (MPCP). This MPCP will outline procedures to protect personnel working and to safeguard the marine environment in the event of an accidental pollution event arising from offshore operations relating to Hornsea Three.	Measures will be adopted to ensure that the potential for release of pollutants from construction, operation and maintenance, and decommissioning plant is minimised. In this manner, accidental release of potential contaminants from rigs and supply/service vessels will be strictly controlled, thus providing protection for marine life across all phases of the wind farm development.
Array, export and interconnector cables will typically be buried to a target burial depth of 1 to 2 m, subject to a cable burial risk assessment. Where it is not possible to ensure that cables will remain buried, cable protection will be installed.	While burial of cables will not reduce the strength of EMF, it does increase the distance between cables and fish and shellfish receptors, thereby potentially reducing the effect on those receptors
A robust MMMP will be approved by the MMO in consultation with Natural England and implemented during construction. The MMMP will use appropriate techniques to ensure that PTS effects (based on final scheme design) are mitigated to negligible levels.	The use of an approved MMMP will mitigate for the risk of physical or permanent auditory injury to marine mammals within a 'mitigation zone' the extent of which shall be determined by appropriate underwater noise modelling outputs based on the final scheme design.
During piling operations, soft starts will be used, with lower hammer energies (i.e. approximately 15% of the maximum hammer energy; see Environmental Statement volume 2, chapter 4) used at the beginning of the piling sequence before increasing energies to the higher levels. These measures will be described in the MMMP.	The soft-start will provide an audible cue to allow marine mammals to exit the area before piling at full hammer energy commences. The soft/slow-start will help to mitigate any potential auditory injury.

**Table 5.1: Designed-in marine mammal mitigation measures that will be adopted as part of Hornsea Three.**

<p>Codes of conduct for vessel operators including advice to operators to not deliberately approach marine mammals and to avoid abrupt changes in course or speed should marine mammals approach the vessel to bow-ride, will be issued to all Hornsea Three vessel operators and adhered to at all times.</p>	<p>To minimise the potential for collision risk or potential injury to, marine mammals</p>
<p>A UXO specific MMMP, approved by the MMO in consultation with Natural England will be implemented during UXO clearance. The UXO MMMP will use appropriate techniques to ensure that PTS effects (based on final scheme design) are mitigated to negligible levels.</p>	<p>The use of an approved MMMP will mitigate for the risk of physical or permanent auditory injury to marine mammals within an agreed 'mitigation zone'.</p>

- 6.1.2 The final MMMP will be developed in the pre-construction period and will be based upon best available information and methodologies at that time, in consultation with the relevant authorities.

## 6.2 Licensing

### Endangered and Protected Species Licence (EPS)

- 6.2.1 Should any work undertaken to inform the SIP or the MMMPs for piling and UXO clearance confirm the need for an EPS licence, a licence will be obtained from the MMO prior to the commencement of licensable works.

### Marine Licences

- 6.2.2 Associated works which may give rise to potential impacts for underwater noise will be subject to licensing (post DCO consent) and notifications e.g. geophysical surveys and unexploded ordnance (UXO) clearance.

## 6.3 Project Southern North Sea SAC site integrity measures

- 6.3.1 This section of the in-principle SIP sets out the measures currently available or likely to be available in the future, which could be applicable to Hornsea Three (they are in line with the options identified within the original draft DCO wording as set out in Section 1.2 above). These measures are seen as additional measures beyond standard mitigation that may be considered in the MMMP and detailed within Table 5.1. For each of the measures, information is provided to explain how it will result in the avoidance of significant disturbance to harbour porpoise and allow the conclusion of 'no adverse effect beyond reasonable scientific doubt' on the SAC. Note there are three relevant issues to be considered here:

- The final project design has not yet been confirmed;
- The precise level of overlapping construction activity remains uncertain; and
- The SAC draft management measures are available.

6.3.2 The adopted mitigation measures will be agreed in the period between consent and the commencement of piling in accordance with the requirements of this SIP following an updated assessment of the potential impacts from pile driving and an assessment of the efficacy of the proposed mitigation measures. Potential measures are defined below, however, confirmation of any measure(s) that will be employed cannot be confirmed until the project design is finalised, the level of in-combination effect is certain, and the final COs and management measures are known for the SAC. At that stage it will be possible to determine what any required measures must achieve in terms of mitigation.

6.3.3 Project management measures may deliver the following potential mitigation:

- Spatial: To minimise the total area of 'disturbance' at any one time. This could be a reduction in the area of the SAC which is subject to noise levels that may cause disturbance to harbour porpoise; and
- Temporal: To minimise the duration of additional underwater noise generated through piling events over any given time frame that may cause 'disturbance' to harbour porpoise in the SAC.

### **Measure 1: Scheduling of pile driving**

6.3.4 Seasonal restrictions in piling activity could provide a potential management measure to minimise the risk to harbour porpoise where there are clear differences in harbour porpoise distribution across the year. This could be used as a measure to reduce exposure to harbour porpoise individuals during specific months within the summer period where the significant disturbance thresholds were shown to be exceeded.

6.3.5 Amendment of the piling schedule potentially could also allow a reduction in the total in-combination area of disturbance from multiple projects, thus reducing the area of the SAC that harbour porpoise may be avoiding at any one time. It could also be used as a measure to reduce the duration of any in-combination continuous disturbance within a given time period (month, season or year).

6.3.6 Amendments to the scheduling of pile driving will allow the piling to be scheduled, in consultation with the MMO, having regard to previous, ongoing and future piling associated with other offshore developments and other activities likely to act in-combination such as seismic surveys.

## **Measure 2: Non-percussive piled foundation methodologies**

- 6.3.7 The use of foundation options that do not comprise percussive piling methods, within the consented project envelope, such as suction piles or gravity base foundations, would result in lower noise levels than pile driving during the construction of the wind farm. The in-combination total area of disturbance to harbour porpoise could be reduced by the implementation of alternate methods.

## **Measure 3: Noise mitigation systems**

- 6.3.8 Systems are currently being developed to reduce pile driving noise (decibels) at source. These methods currently include various types of bubble curtain, hydro sound dampers, screens or tubes, and cofferdams.
- 6.3.9 By reducing the noise at source, the total area of potential disturbance to harbour porpoise would be decreased. It should be noted that suitability of any noise mitigation system will be dependent on a number of factors including pile diameter and length, ground conditions, and water depth. These factors will be considered in any assessment of the efficacy of the measure. The information to inform this selection will be contingent on the selection of the chosen foundation type and supplier which will only be available once contracts are being finalised post consent and Financial Investment Decision (FID).
- 6.3.10 Prior to the start of construction, a revised noise assessment for the final design of the wind farm will be prepared and submitted to the MMO. This will clearly set out the predicted noise levels to be generated by the preferred foundation type, installation technique and construction programme. This will then be used to update the commitments within this SIP.

## **Measure 4: Other relevant technologies or methodologies that may emerge in the future**

- 6.3.11 The SIP allows other relevant technologies or methodologies that may arise in the future to be considered and assessed, such as alternative types of pile drivers that generate less noise (i.e., The Blue Hammer<sup>4</sup>, as an example). This will allow any new technologies or methods that may occur prior to construction to be considered for use during construction of the project.
- 6.3.12 Due to the time lag between consent and the start of offshore construction (which may be a number of years); it is possible that new measures, such as those described in paragraph 6.3.11) may become available. The SIP should not be restricted to measures only available at the time of consent.

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<sup>4</sup> a type of hammer being tested which uses a large water tank to provide a more energetic, but quieter blow designed to reduce underwater noise levels

### **Assessment of efficacy of measures and implementation**

- 6.3.13 Before implementation of any project mitigation or management measures, the efficacy of each measure (alone or in combination with other measures) will be assessed to ensure the approach is able to achieve any required reduction in disturbance to harbour porpoise. The assessment is expected to include a degree of likely confidence in each measure.
- 6.3.14 The MMO and other statutory consultees will be engaged during this to ensure that any approach to such assessment, uses the most robust method possible and is done in timely fashion.
- 6.3.15 Following assessment of project mitigation and management measures, the undertaker will consult with the MMO on a timescale for delivery of any measures, an implementation plan for any such measures, and also agree any monitoring or reporting requirements. The implementation plan will detail the method for implementation of the measures, and how any non-compliance will be rectified.

## 7. Conclusions

- 7.1.1 The SNS SAC draft COs and site management measures are yet to be confirmed. Upon the provision of further guidance from JNCC and Natural England, this SIP will be revised in consultation with the MMO and other relevant bodies to ensure that the COs are included in the SIP.
- 7.1.2 Once the final SIP has been produced it will identify and evaluate the potential mitigation and management options to ensure that there is 'no adverse effect beyond reasonable scientific doubt' on the SNS SAC in relation to significant disturbance of harbour porpoise from the final design of Hornsea Three. Responses from the consultation process regarding the proposed project management or mitigation measures will be recorded in the final version of the SIP.

## 8. References

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